REMARKS

Status of Claims:

Claims 1-21 are present for examination.

Drawings:

The drawing FIG. 4 has been amended to have margins in compliance with the requirements of 37 CFR 1.84.

Claim Rejections:

Claims 1-8, 9-14, and 19-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Belkin (U.S. Patent Number 6,604,125).

Claims 7-8 and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Belkin in view of Reisman (U.S. Patent Number 6,611,862).

With respect to claims 1-21, as amended, the rejections are respectfully traversed.

Independent claim 1, as amended, recites a method of maintaining two-way asynchronous communication between a client and a web server using a single HTTP transaction, comprising:

> "communicating an HTTP request from the client to the web server, wherein the HTTP request is configured to **initialize a CGI** that operates within or in conjunction with the web server; and

> executing operations associated with the CGI, wherein the operations are configured to perform the **two-way asynchronous** communication with the client until terminated by the client or the CGI." (Emphasis Added)

A method of maintaining two-way **asynchronous** communication between a client and a web server including the above-quoted features has the advantage that, using a single HTTP transaction, operations associated with a CGI are executed, where the operations are configured to perform the two-way **asynchronous** communication with the client until terminated by the client or the CGI. In addition, an HTTP request that is communicated from

the client to the web server is configured to <u>initialize a CGI</u> that operates within or in conjunction with the web server. Such an HTTP request from the client may include a client request for information, but is <u>not required</u> to include a client request for information, so such an HTTP request may simply be a request to <u>initialize a CGI</u> without also including a request for information.

As shown in applicants' FIG. 2, **asynchronous** communication allows for operations in which the CGI <u>reads</u> and processes client <u>requests</u> (steps 230, 240), and such reading and processing is <u>decoupled</u> from operations in which the CGI determines if there is information or requests to send to the client and operations in which the CGI <u>sends information</u> or requests to the client (steps 232, 242). Also, as shown in applicants' FIG. 4, **asynchronous** communication allows for operations in which the client <u>sends</u> client requests or information (step 430), and such sending is <u>decoupled</u> from operations in which the client <u>receives</u> information or requests and operations in which the client processes received information or requests (steps 432, 437).

Thus, with two-way **asynchronous** communication, there does <u>not</u> have to be a <u>cause and effect</u> relationship in operations of the CGI between reading client requests and sending information to the client. Also, with two-way <u>asynchronous</u> communication, there does <u>not</u> have to be a <u>cause and effect</u> relationship in operations of the client between sending client requests and receiving information. For example, information may be sent from the CGI to the client where the information is <u>not</u> directly <u>in response</u> to a client request, and operations for <u>reading requests</u> and <u>sending information</u> by the CGI may occur <u>concurrently</u>. (Applicants' FIGs. 2 and 4; Specification; page 3, lines 5-7 and 12-22; page 6, lines 5-24; page 8, line 27 to page 9, line 7).

In order to more fully explain the difference between **synchronous** and **asynchronous** communication, consider the example of a telephone conversation between two parties, which is a simplified example of <u>two-way asynchronous</u> communication. A telephone conversation is an example of two-way asynchronous communication because both parties can talk <u>whenever</u> they desire to talk, and one party does <u>not</u> have to <u>wait</u> for the other party to talk before talking. Also, the two parties can talk <u>concurrently</u>.

The claimed invention addresses the problem in the prior art methods where an HTTP transaction includes opening a socket connection, sending an HTTP request, executing an action, formulating HTTP responses, and sending the HTTP responses back to the client. In such prior art methods, the sending of responses can <u>only</u> occur <u>in response</u> to client requests and, thus, the prior art methods only allow for **synchronous** communication and **not** two-way **asynchronous** communication. (Applicants' FIGs. 2 and 4; Specification; page 3, lines 5-7 and 12-22; page 6, lines 5-24; page 8, line 27 to page 9, line 7).

The Examiner states that, "Belkin teaches a method for the client communicating to a web server using the HTTP protocol", and that, "Belkin also teaches the system includes a communication interface provides a two-way **data** communication connected to the local network and client (Belkin, col. 18, l. 45-47)." (Emphasis Added). Thus, the Examiner recognizes that Belkin teaches "two-way **data** communication". However, a method including the above-quoted features allows for "two-way **asynchronous** communication". The Examiner left out the word "**asynchronous**" in forming the rejection. Indeed, the term "**two-way asynchronous**" communication is a very important limitation in applicants' claim. This limitation is **not** shown in Belkin. Thus, Belkin does <u>not</u> teach <u>every element</u> of the present claim and, therefore, the 102 rejection must be withdrawn.

More specifically, Belkin neither discloses nor suggests a method of maintaining two-way asynchronous communication between a client and a web server using a <u>single HTTP transaction</u> including the above-quoted features that allows for executing operations associated with a CGI, where the operations are configured to perform <u>two-way</u> **asynchronous** communication with the client until terminated by the client or the CGI. As seen in FIG. 4 of Belkin, the method of Belkin only allows for a web server to **receive a request** (step 404), assign a thread to service the request (step 408), invoke a service with the thread to **process the request** (step 410), generate and **send response pages** in reply to the request (step 414), and then return the thread to a thread pool (step 416). (Belkin; FIG. 4; column 8, line 48 to column 11, line 3). Therefore, the communication using a <u>single HTTP transaction</u> in Belkin can **only** be **synchronous**, because there must first be a <u>request</u> received, and then response pages are <u>sent in reply</u> to the request. (Belkin; FIG. 4). In the

synchronous communication of Belkin, there is only a cause and effect relationship between requests and responses and, thus, the sending of information cannot be decoupled from the receiving of requests. As a result, the system of Belkin does **not** allow for two-way **asynchronous** communication using a single HTTP transaction.

Therefore, independent claim 1 is neither disclosed nor suggested by the cited prior art and, hence, is believed to be allowable.

Independent claim 9, as amended, recites a system for maintaining two-way asynchronous communication between a client and a web server using a single HTTP transaction with features similar to features of a method of maintaining two-way asynchronous communication between a client and a web server using a single HTTP transaction of independent claim 1. Therefore, independent claim 9 is believed to be allowable for at least the same reasons that independent claim 1 is believed to be allowable.

Independent claim 20, as amended, recites a method of maintaining two-way asynchronous communication between a client and a web server using a single HTTP transaction with features similar to features of a method of maintaining two-way asynchronous communication between a client and a web server using a single HTTP transaction of independent claim 1. Therefore, independent claim 20 is believed to be allowable for at least the same reasons that independent claim 1 is believed to be allowable.

Independent claim 21, as amended, recites a system for maintaining two-way asynchronous communication between a client and a web server using a single HTTP transaction with features similar to features of a method of maintaining two-way asynchronous communication between a client and a web server using a single HTTP transaction of independent claim 1. Therefore, independent claim 21 is believed to be allowable for at least the same reasons that independent claim 1 is believed to be allowable.

The dependent claims are deemed allowable for at least the same reasons indicated above with regard to the independent claims from which they depend.

Conclusion:

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone in order to advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741.

If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date _7-/1-0 5_   By _[signature]_

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